

WEST Search History

[Hide Items](#)[Restore](#)[Clear](#)[Cancel](#)

DATE: Tuesday, November 01, 2005

Hide?	Set Name	Query	Hit Count
		<i>DB=PGPB,USPT; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L10	L6 and (guanine 37 or g37)	0
<input type="checkbox"/>	L9	L6 and (val13 or val389)	0
<input type="checkbox"/>	L8	L6 and (valine 13 or valine 389)	0
<input type="checkbox"/>	L7	L6 and dna fragment	33
<input type="checkbox"/>	L6	L5 and (fragment or portion)	374
<input type="checkbox"/>	L5	L4 and chlamydomonas	374
<input type="checkbox"/>	L4	L3 and transgenic	593
<input type="checkbox"/>	L3	L2 and plant	666
<input type="checkbox"/>	L2	L1 and herbicide	682
<input type="checkbox"/>	L1	ppo or protoporphyrinogen oxidase	6208

END OF SEARCH HISTORY

Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID:sssptal649axm

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * Welcome to STN International * * * * *

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
NEWS 2 "Ask CAS" for self-help around the clock
NEWS 3 JUL 20 Powerful new interactive analysis and visualization software,
STN AnaVist, now available
NEWS 4 AUG 11 STN AnaVist workshops to be held in North America
NEWS 5 AUG 30 CA/CAPLUS - Increased access to 19th century research documents
NEWS 6 AUG 30 CASREACT - Enhanced with displayable reaction conditions
NEWS 7 SEP 09 ACD predicted properties enhanced in REGISTRY/ZREGISTRY
NEWS 8 OCT 03 MATHDI removed from STN
NEWS 9 OCT 04 CA/CAPLUS-Canadian Intellectual Property Office (CIPO) added
to core patent offices
NEWS 10 OCT 06 STN AnaVist workshops to be held in North America
NEWS 11 OCT 13 New CAS Information Use Policies Effective October 17, 2005
NEWS 12 OCT 17 STN(R) AnaVist(TM), Version 1.01, allows the export/download
of CAPLUS documents for use in third-party analysis and
visualization tools
NEWS 13 OCT 27 Free KWIC format extended in full-text databases
NEWS 14 OCT 27 DIOGENES content streamlined
NEWS 15 OCT 27 EPFULL enhanced with additional content

NEWS EXPRESS JUNE 13 CURRENT WINDOWS VERSION IS V8.0, CURRENT
MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
AND CURRENT DISCOVER FILE IS DATED 13 JUNE 2005

NEWS HOURS STN Operating Hours Plus Help Desk Availability
NEWS INTER General Internet Information
NEWS LOGIN Welcome Banner and News Items
NEWS PHONE Direct Dial and Telecommunication Network Access to STN
NEWS WWW CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that
specific topic.

All use of STN is subject to the provisions of the STN Customer
agreement. Please note that this agreement limits use to scientific
research. Use for software development or design or implementation
of commercial gateways or other similar uses is prohibited and may
result in loss of user privileges and other penalties.

* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 16:33:38 ON 01 NOV 2005

=> file agricola caplus biosis

COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
0.21	0.21

FULL ESTIMATED COST

FILE 'AGRICOLA' ENTERED AT 16:33:49 ON 01 NOV 2005

FILE 'CAPLUS' ENTERED AT 16:33:49 ON 01 NOV 2005

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'BIOSIS' ENTERED AT 16:33:49 ON 01 NOV 2005

Copyright (c) 2005 The Thomson Corporation

=> s ppo or protoporphyrinogen oxidase

L1 5701 PPO OR PROTOPOPHYRINOGEN OXIDASE

=> del l1 y

=> s ppo or protoporphyrinogen

L1 5701 PPO OR PROTOPOPHYRINOGEN

=> s l1 and plant?

L2 1361 L1 AND PLANT?

=> s l2 and herbicide

L3 41 L2 AND HERBICIDE

=> dup rem l3

PROCESSING COMPLETED FOR L3

L4 26 DUP REM L3 (15 DUPLICATES REMOVED)

=> d 1-10 ti

L4 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

TI Inducers of **plant** disease resistance

L4 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

TI Protoporphyrinogen IX oxidase variant-expressing transgenic **plants** resistant to weed herbicidal compounds which disrupt the porphyrin pathways of **plants**

L4 ANSWER 3 OF 26 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

TI ELISA and liquid chromatography/mass spectrometry/mass spectrometry methods for sulfentrazone and its acid metabolite in groundwater samples.

L4 ANSWER 4 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1

TI Development of PPO inhibitor-resistant cultures and crops.

L4 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2

TI A waterhemp (Amaranthus tuberculatus) biotype with multiple resistance across three **herbicide** sites of action

L4 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

TI Distribution and metabolism of D/L-, L- and D-glufosinate in transgenic, glufosinate-tolerant crops of maize (Zea mays L ssp mays) and oilseed rape (Brassica napus L var napus)

L4 ANSWER 7 OF 26 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

TI Amaranthus spp. and **herbicide** resistance: a growing concern in Canada and the US.

L4 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

TI Development of protoporphyrinogen oxidase as an efficient **herbicide** selection marker for transgenic crop **plants**

L4 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
 TI Microbial **herbicide** metabolizing proteins, cDNAs, and use in weed control and generation of **herbicide-resistant transgenic plants**

L4 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
 TI Putative F420-dependent glucose-6-phosphate dehydrogenase from Mycobacterium neoaurum, that degrades uracil backbone containing protoporphyrinogen oxidase (PPO) inhibitor-type herbicides, and encoding gene

=> d 2 pi

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6906245	B1	20050614	US 2000-697719	20001027
	ZA 9902837	A	20001023	ZA 1999-2837	19990421
	US 6570070	B1	20030527	US 1999-302357	19990430

=> d 4 ab

L4 ANSWER 4 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1

AB Recent progress in the development of protoporphyrinogen oxidase (PPO, Protox) inhibitor-resistant **plant cell cultures** and crops is reviewed, with emphasis on the molecular and cellular aspects of this topic. **PPO herbicide-resistant maize plants** have been reported, along with the isolation of **plant PPO genes** and the isolation of **herbicide-resistant mutants**. At the same time, **PPO inhibitor-resistant rice plants** have been developed by expression of the Bacillus subtilis **PPO gene** via targeting the gene into either chloroplast or cytoplasm. Other attempts to develop **PPO herbicide-resistant plants** include conventional tissue culture methods, expression of modified co-factors of the protoporphyrin IX binding subunit proteins, over-expression of wild-type **plant PPO gene**, and engineering of P-450 monooxygenases to degrade the **PPO inhibitor**.

=> d 4 so

L4 ANSWER 4 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1

SO Pest management science, 2005 Mar. Vol. 61, issue 3 p. 277-285
 ISSN: 1526-498X

=> d 8 ab

L4 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Butafenacil is an inhibitor of **plant protoporphyrinogen oxidase (PPO) enzymes**. Overexpression of naturally **herbicide resistant PPO genes**, or **PPO genes** that have been mutated to become **herbicide resistant**, is a strategy that has been reported to give resistance to di-Ph ether

herbicides (Lee et al, Plant cell pysiol 41:743-749 (2000)). The work of Marc Law, Xiaggan Li and co-workers at Syngenta, focussed on the use and adaptation by mutagenesis of plant PPO genes to confer resistance to Butafenacil. Transgenic Arabidopsis and maize plants were produced that express a double mutant version of an Arabidopsis PPO coding sequence. Butafenacil has been used successfully as a selection agent in transformation expts. to kill plants or plant materials resulting from the transformation process, which are not transgenic or do not express the PPO transgene. Butafenacil selection in A.tumefaciens mediated transformation show that butafenacil is a good selection agent allowing transformation efficiencies in maize of around 20-40%. Selected maize lines containing the PPO transgene are resistant to an application of 400g ai/ha (3x effective field rate) with little or no detectable damage.

=> d 11-20 ti

- L4 ANSWER 11 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 3
- TI Development of protoporphyrinogen oxidase as an efficient selection marker for Agrobacterium tumefaciens-mediated transformation of maize.

- L4 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI Fluorometric labeling method for screening protoporphyrinogen oxidase inhibitors as potential herbicides

- L4 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4
- TI A comparative investigation of the metabolism of the herbicide glufosinate in cell cultures of transgenic glufosinate-resistant and non-transgenic oilseed rape (Brassica napus) and corn (Zea mays)

- L4 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI Construction of chimeric gene containing Arabidopsis thaliana plastid clpP and psbB gene promoters linked to genes (PPO, hemG or hemY) encoding resistance to herbicides, and their use in transforming plants

- L4 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI Herbicide-resistant transgenic plants having protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed control

- L4 ANSWER 16 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 5
- TI Gene targeting in Arabidopsis.

- L4 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI Method of controlling weeds in transgenic crops

- L4 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI ELISA method in determination of sulfentrazone and the acid metabolite in water samples.

- L4 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
- TI A method for evaluating the ability of a compound to inhibit the protoporphyrinogen oxidase activity

- L4 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 6

TI Carfentrazone-ethyl + mecoprop-p (platform S): a new herbicide for the control of cleavers and other broad-leaved weeds in wheat and barley

=> d 15 ab

L4 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

AB Plants resistant to herbicides that inhibit 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) activity, are disclosed. The plants have non-native EPSPS and glyphosate oxidoreductase (GOX) activities, and are transformed with a gene coding for a protein that bind protoporphyrinogen IX oxidase (PPO) inhibitors, but not having Ig hypervariable regions. The herbicides are chlormethoxynil, bifenox, chlornitrofen, acifluorfen, or its Et ester, oxyfluorfen, oxadiazon, S-23142, chlorophthalim, TNPP-Et, LS82-556, and other heterocyclic compds. (Markush given). The proteins may be protoporphyrin IX-binding subunit of magnesium chelatase, protoporphyrinogen IX oxidase mutant, ferrochelatase, or coproporphyrinogen III oxidase (CPOX), etc. The substances may be protoporphyrinogen IX. Weed control and screening of the resistant plants are performed by applying herbicides to an area where the transgenic plants grow. Production of transgenic tobacco plant having a gene encoding tobacco Mg chelatase protoporphyrin IX-binding subunit, soybean or Chlamydomonas reinhardtii PPO gene, Arabidopsis thaliana ferrochelatase gene, or soybean CPOX gene, and a CTP-CP4 EPSPS gene was shown.

=> d 15 so

L4 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

SO Jpn. Kokai Tokkyo Koho, 66 pp.
CODEN: JKXXAF

=> d 15 pi

L4 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001190168	A2	20010717	JP 2000-328811	20001027

=> d 16 ab

L4 ANSWER 16 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN

DUPLICATE 5

AB Precise modification by gene targeting (GT) provides an important tool for studies of gene function in vivo. Although routine with many organisms, only isolated examples of GT events have been reported for flowering plants. These were at low frequencies precluding reliable estimation of targeting efficiency and evaluation of GT mechanisms. Here we present an unambiguous and straightforward system for detection of GT events in Arabidopsis using an endogenous nuclear gene encoding protoporphyrinogen oxidase (PPO), involved in chlorophyll and heme syntheses. Inhibition of PPO by the herbicide Butafenacil results in rapid plant death. However, the combination of two particular mutations renders PPO highly resistant to Butafenacil. We exploited this feature for selection of GT events by introducing the mutations into the PPO gene by homologous recombination. We have estimated the basal GT frequency to be 2.4×10^{-3} . Approximately one-third of events were true GT (TGT) leading

to the anticipated modification of the chromosomal PPO copy. The remaining events could be classified as ectopic GT (EGT) arising by modification of vector DNA by the chromosomal template and its random integration into the Arabidopsis genome. Thus the TGT frequency in our experimental setup is 0.72×10^{-3} . In view of the high efficiency of Arabidopsis transformation, GT experiments of a reasonable size followed by a PCR screen for GT events should also allow for modification of non-selectable targets. Moreover, the system presented here should contribute significantly to future improvement of GT technology in plants.

=> d 16 so

L4 ANSWER 16 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 5
SO The Plant journal : for cell and molecular biology, Dec 2001. Vol. 28, No. 6. p. 671-677
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412

=> d 17 ab

L4 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
AB The invention provides a method for securing prolonged, e.g. preferably season-long, control of weeds in crops, the crop being tolerant to a PPO-inhibiting herbicide. The method comprises the pre-crop emergence application of an isoxazole or dione herbicide (Markush given), and optionally a post-crop emergence application of a PPO-inhibiting herbicide or a salt thereof.

=> d 17 pi

L4 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000074488	A1	20001214	WO 2000-EP5782	20000530
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

=> d 19 ab

L4 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN
AB It is known that compds. which inhibit the plant-derived protoporphyrinogen oxidase (PPO) activity have generally herbicidal activity. The present invention relates to a method for evaluating the ability of a compound to inhibit the PPO activity. The method comprises the steps of: (1) culturing a transformant expressing a PPO gene present in a DNA fragment in a medium containing substantially no protoheme compds. in each comparative system of the presence and absence of a test compound to measure a growth rate of the transformant under each condition, said transformant being resulted from a

host cell deficient in the growing ability based on the PPO activity transformed with the DNA fragment in which a promoter functionable in the host cell and a protoporphyrinogen oxidase gene are operatively linked, and (2) determining the ability of the compound to inhibit the PPO activity by comparing the growth rates; and the like.

=> d 21-26 ti

- L4 ANSWER 21 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 7
TI Florasulam (Primus), a new selective triazolopyrimidine sulfonanilide (ALS) **herbicide** to control broad-leaved weeds in cereals; Belgian results from 1994 to 1997
- L4 ANSWER 22 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 8
TI Species difference in protoporphyrin IX accumulation produced by an N-phenylimide **herbicide** in embryos between rats and rabbits.
- L4 ANSWER 23 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 9
TI Generation of resistance to the diphenyl ether **herbicide** acifluorfen by MEL cells.
- L4 ANSWER 24 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 10
TI Transgenic **plants** containing the phosphinothricin-N-acetyltransferase gene metabolize the **herbicide** L-phosphinothricin (glufosinate) differently from untransformed **plants**.
- L4 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 11
TI Peroxidase and polyphenol oxidase activities in Cyperus esculentus leaves following glyphosate applications
- L4 ANSWER 26 OF 26 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI BIOCHEMICAL EFFECTS OF GLYPHOSATE ON **PLANT** MERISTEMS.

=> s l4 and chlamydomonas

L5 3 L4 AND CHLAMYDOMONAS

=> d 1-3 ti

- L5 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
TI Protoporphyrinogen IX oxidase variant-expressing transgenic **plants** resistant to weed herbicidal compounds which disrupt the porphyrin pathways of **plants**
- L5 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
TI **Herbicide**-resistant transgenic **plants** having protoporphyrinogen IX oxidase inhibitor binding activity, and use in weed control
- L5 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
TI A method for evaluating the ability of a compound to inhibit the

protoporphyrinogen oxidase activity

=> d pi

L5	ANSWER 1 OF 3	CAPLUS	COPYRIGHT 2005	ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6906245	B1	20050614	US 2000-697719	20001027
	ZA 9902837	A	20001023	ZA 1999-2837	19990421
	US 6570070	B1	20030527	US 1999-302357	19990430

=> d 2-3 so

L5 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
 SO Jpn. Kokai Tokkyo Koho, 66 pp.
 CODEN: JKXXAF

L5 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
 SO Eur. Pat. Appl., 46 pp.
 CODEN: EPXXDW

=> d 2-3 pi

L5	ANSWER 2 OF 3	CAPLUS	COPYRIGHT 2005	ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001190168	A2	20010717	JP 2000-328811	20001027

L5	ANSWER 3 OF 3	CAPLUS	COPYRIGHT 2005	ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 955380	A2	19991110	EP 1999-107037	19990409
	EP 955380	A3	20030618		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	AU 9923649	A1	19991021	AU 1999-23649	19990408
	AU 769868	B2	20040205		
	CA 2266807	AA	19991010	CA 1999-2266807	19990409
	JP 11346787	A2	19991221	JP 1999-102534	19990409
	US 6472164	B1	20021029	US 1999-289180	19990409
	US 2002086395	A1	20020704	US 2001-978709	20011018
	US 6830926	B2	20041214		

=> s l4 and valine

L6 0 L4 AND VALINE

=> s ((boynton j?) or (boynton, j?))/au

L7 364 ((BOYNTON J?) OR (BOYNTON, J?))/AU

=> s l7 and protoporphyrinogen

L8 10 L7 AND PROTOPORPHYRINOGEN

=> dup rem l8

PROCESSING COMPLETED FOR L8

L9 5 DUP REM L8 (5 DUPLICATES REMOVED)

=> d 1-5 ti

L9 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
 TI Methods of conferring resistance to herbicides inhibiting

protoporphyrinogen biosynthesis to crop plants

- L9 ANSWER 2 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1
- TI Isolation and characterization of a mutant **protoporphyrinogen** oxidase gene from *Chlamydomonas reinhardtii* conferring resistance to porphyrinic herbicides.
- L9 ANSWER 3 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 2
- TI Characterization of a mutant of *Chlamydomonas reinhardtii* resistant to **protoporphyrinogen** oxidase inhibitors.
- L9 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3
- TI Isolation and characterization of a *Chlamydomonas reinhardtii* mutant resistant to photobleaching herbicides
- L9 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4
- TI Isolation and characterization of a *Chlamydomonas reinhardtii* mutant resistant to an experimental herbicide S-23142, which inhibits chlorophyll synthesis

=> d pi

- L9 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
- | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 9829554 | A1 | 19980709 | WO 1996-US20415 | 19961227 |
| W: AU, CA, JP, US | | | | |
| RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| CA 2276053 | AA | 19980709 | CA 1996-2276053 | 19961227 |
| AU 9714298 | A1 | 19980731 | AU 1997-14298 | 19961227 |
| AU 739948 | B2 | 20011025 | | |
| EP 1007703 | A1 | 20000614 | EP 1996-944519 | 19961227 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| JP 2002528036 | T2 | 20020827 | JP 1998-529941 | 19961227 |

=> d 2 so

- L9 ANSWER 2 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1
- SO Plant molecular biology, Nov 1998. Vol. 38, No. 5. p. 839-859
Publisher: Dordrecht : Kluwer Academic Publishers.
CODEN: PMBIDB; ISSN: 0167-4412

=> d 2 ab

- L9 ANSWER 2 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1
- AB In plant and algal cells, inhibition of the enzyme **protoporphyrinogen** oxidase (Protox) by the N-phenyl heterocyclic herbicide S-23142 causes massive protoporphyrin IX accumulation, resulting

in membrane deterioration and cell lethality in the light. We have identified a 40.4 kb genomic fragment encoding S-23142 resistance by using transformation to screen an indexed cosmid library made from nuclear DNA of the dominant rs-3 mutant of *Chlamydomonas reinhardtii*. A 10.0 kb HindIII subclone (Hind 10) of this insert yields a high frequency of herbicide-resistant transformants, consistent with frequent non-homologous integration of the complete RS-3 gene. A 3.4 kb XhoI subfragment (Xho3.4) yields rare herbicide-resistant transformants, suggestive of homologous integration of a portion of the coding sequence containing the mutation. Molecular and genetic analysis of the transformants localized the rs-3 mutation conferring S-23142 resistance to the Xho3.4 fragment, which was found to contain five putative exons encoding a protein with identity to the C-terminus of the Arabidopsis Protox enzyme. A cDNA clone containing a 1698 bp ORF that encodes a 563 amino acid peptide with 51% and 53% identity to Arabidopsis and tobacco Protox I, respectively, was isolated from a wild-type *C. reinhardtii* library. Comparison of the wild-type cDNA sequence with the putative exon sequences present in the mutant Xho3.4 fragment revealed a G leads to A change at 291 in the first putative exon, resulting in a Val leads to Met substitution at a conserved position equivalent to Val-389 of the wild-type *C. reinhardtii* cDNA. A sequence comparison of genomic Hind10 fragments from *C. reinhardtii* rs-3 and its wild-type progenitor CC-407 showed this G leads to A change at the equivalent position (5751) within exon 10.

=> d 2 au

- L9 ANSWER 2 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 1
- AU Randolph-Anderson, B.L.; Sato, R.; Johnson, A.M.; Harris, E.H.; Hauser, C.R.; Oeda, K.; Ishige, F.; Nishio, S.; Gillham, N.W.; Boynton, J.E.

=> d 3 so

- L9 ANSWER 3 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN DUPLICATE 2
- SO ACS symposium series, 1994. No. 559. p. 91-104
Publisher: Washington, D.C. : American Chemical Society, 1974-
CODEN: ACSMC8; ISSN: 0097-6156

=> d 4 so

- L9 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3
- SO Zeitschrift fuer Naturforschung, C: Journal of Biosciences (1993), 48(3-4), 339-44
CODEN: ZNCBDA; ISSN: 0341-0382

=> d 5 so

- L9 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4
- SO Res. Photosynth., Proc. Int. Congr. Photosynth., 9th (1992), Volume 3, 567-70. Editor(s): Murata, Norio. Publisher: Kluwer, Dordrecht, Neth.
CODEN: 59IZA5

=> s ((gillham n?) or (gillham, n?))/au

```

L10      311 ((GILLHAM N?) OR (GILLHAM, N?))/AU

=> s l10 and protoporphyrinogen
L11      10 L10 AND PROTOPORPHYRINOGEN

=> dup rem l11
PROCESSING COMPLETED FOR L11
L12      5 DUP REM L11 (5 DUPLICATES REMOVED)

=> d 1-5 ti

L12 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
TI Methods of conferring resistance to herbicides inhibiting
protoporphyrinogen biosynthesis to crop plants

L12 ANSWER 2 OF 5 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1
TI Isolation and characterization of a mutant protoporphyrinogen
oxidase gene from Chlamydomonas reinhardtii conferring resistance to
porphyric herbicides.

L12 ANSWER 3 OF 5 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 2
TI Characterization of a mutant of Chlamydomonas reinhardtii resistant to
protoporphyrinogen oxidase inhibitors.

L12 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3
TI Isolation and characterization of a Chlamydomonas reinhardtii mutant
resistant to photobleaching herbicides

L12 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4
TI Isolation and characterization of a Chlamydomonas reinhardtii mutant
resistant to an experimental herbicide S-23142, which inhibits chlorophyll
synthesis

=> s ((randolph-anderson b?) or (randolph-anderson, b?))/au
L13      24 ((RANDOLPH-ANDERSON B?) OR (RANDOLPH-ANDERSON, B?))/AU

=> s l13 and protoporphyrinogen
L14      4 L13 AND PROTOPORPHYRINOGEN

=> dup rem l14
ENTER REMOVE, IDENTIFY, ONLY, OR (?):l14
'L53' IS NOT VALID HERE
Enter "REMOVE" to identify and remove duplicate answers.
Enter "IDENTIFY" to identify duplicate answers in the answer set.
Enter "ONLY" to identify and create an answer set containing only
duplicate records.
ENTER REMOVE, IDENTIFY, ONLY, OR (?):only
ENTER L# LIST OR (END):end

=> dup rem l14
PROCESSING COMPLETED FOR L14
L15      2 DUP REM L14 (2 DUPLICATES REMOVED)

=> d 1-2 ti

L15 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
TI Methods of conferring resistance to herbicides inhibiting

```

protoporphyrinogen biosynthesis to crop plants

L15 ANSWER 2 OF 2 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1

TI Isolation and characterization of a mutant **protoporphyrinogen**
oxidase gene from *Chlamydomonas reinhardtii* conferring resistance to
porphyric herbicides.

=> s ((ishige f?) or (ishige, f?))/au
L16 29 ((ISHIGE F?) OR (ISHIGE, F?))/AU

=> s l16 and protoporphyrinogen
L17 4 L16 AND PROTOPORPHYRINOGEN

=> dup rem l17
PROCESSING COMPLETED FOR L17
L18 2 DUP REM L17 (2 DUPLICATES REMOVED)

=> d 1-27 ti

L18 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
TI Methods of conferring resistance to herbicides inhibiting
protoporphyrinogen biosynthesis to crop plants

L18 ANSWER 2 OF 2 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1

TI Isolation and characterization of a mutant **protoporphyrinogen**
oxidase gene from *Chlamydomonas reinhardtii* conferring resistance to
porphyric herbicides.

=> s ((sato r?) or (sato, r?))/au
L19 3131 ((SATO R?) OR (SATO, R?))/AU

=> s l19 and protoporphyrinogen
L20 11 L19 AND PROTOPORPHYRINOGEN

=> dup rem l20
PROCESSING COMPLETED FOR L20
L21 6 DUP REM L20 (5 DUPLICATES REMOVED)

=> d 1-6 ti

L21 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
TI Flumioxazin as a new herbicide

L21 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
TI Methods of conferring resistance to herbicides inhibiting
protoporphyrinogen biosynthesis to crop plants

L21 ANSWER 3 OF 6 AGRICOLA Compiled and distributed by the National
Agricultural Library of the Department of Agriculture of the United States
of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1

TI Isolation and characterization of a mutant **protoporphyrinogen**
oxidase gene from *Chlamydomonas reinhardtii* conferring resistance to
porphyric herbicides.

L21 ANSWER 4 OF 6 AGRICOLA Compiled and distributed by the National

Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 2

TI Characterization of a mutant of *Chlamydomonas reinhardtii* resistant to protoporphyrinogen oxidase inhibitors.

L21 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3

TI Isolation and characterization of a *Chlamydomonas reinhardtii* mutant resistant to photobleaching herbicides

L21 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4

TI Isolation and characterization of a *Chlamydomonas reinhardtii* mutant resistant to an experimental herbicide S-23142, which inhibits chlorophyll synthesis

=> d 3 ab

L21 ANSWER 3 OF 6 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1

AB In plant and algal cells, inhibition of the enzyme protoporphyrinogen oxidase (Protox) by the N-phenyl heterocyclic herbicide S-23142 causes massive protoporphyrin IX accumulation, resulting in membrane deterioration and cell lethality in the light. We have identified a 40.4 kb genomic fragment encoding S-23142 resistance by using transformation to screen an indexed cosmid library made from nuclear DNA of the dominant rs-3 mutant of *Chlamydomonas reinhardtii*. A 10.0 kb HindIII subclone (Hind 10) of this insert yields a high frequency of herbicide-resistant transformants, consistent with frequent non-homologous integration of the complete RS-3 gene. A 3.4 kb XhoI subfragment (Xho3.4) yields rare herbicide-resistant transformants, suggestive of homologous integration of a portion of the coding sequence containing the mutation. Molecular and genetic analysis of the transformants localized the rs-3 mutation conferring S-23142 resistance to the Xho3.4 fragment, which was found to contain five putative exons encoding a protein with identity to the C-terminus of the Arabidopsis Protox enzyme. A cDNA clone containing a 1698 bp ORF that encodes a 563 amino acid peptide with 51% and 53% identity to Arabidopsis and tobacco Protox I, respectively, was isolated from a wild-type *C. reinhardtii* library. Comparison of the wild-type cDNA sequence with the putative exon sequences present in the mutant Xho3.4 fragment revealed a G leads to A change at 291 in the first putative exon, resulting in a Val leads to Met substitution at a conserved position equivalent to Val-389 of the wild-type *C. reinhardtii* cDNA. A sequence comparison of genomic Hind10 fragments from *C. reinhardtii* rs-3 and its wild-type progenitor CC-407 showed this G leads to A change at the equivalent position (5751) within exon 10.

=> d 3 so

L21 ANSWER 3 OF 6 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2005) on STN DUPLICATE 1

SO Plant molecular biology, Nov 1998. Vol. 38, No. 5. p. 839-859
Publisher: Dordrecht : Kluwer Academic Publishers.
CODEN: PMBIDB; ISSN: 0167-4412